AEROJET ROCKETDYNE

7499 Pine Stake Road
Culpeper, Virginia 22701

Telephone: (540) 854-2037
Facsimile: (540) 854-2002

August 4, 2016

FedEx and Email

Shawn M. Garvin
Regional Administrator (3 LC20)
U.S. Environmental Protection Agency, Region 3
1650 Arch Street
Philadelphia, PA 19103

Re: Incident Report; Aerojet Rocketdyne, Inc.; Orange County Facility; EPA ID No. VAD981112618

Dear Mr. Garvin:

Aerojet Rocketdyne Inc. (AR) is submitting the attached written report pursuant to 40 CFR Part 264.56(i), which requires the owner/operator of a facility to submit a report within 15 days of implementing their RCRA Contingency Plan in response to an incident.

I contacted Luis Pizarro of your office last week to make him aware of the incident, to brief him on the current status of emergency response actions, and to request guidance on preparation of this report. He instructed me to follow the outline in 40 CFR Part 264.56(i), which I have done. Note that the emergency response actions and cleanup have not been completed within the 15-day reporting period. We are planning to implement emergency control methods that may include treatment, storage, and disposal methods not covered under our current RCRA permit under an emergency permit to be issued by the Virginia Department of Environmental Quality (VA-DEQ). Those emergency control methods are designed to address untreated solid propellant wastes that remain within the RCRA permitted hazardous waste treatment facility. As discussed with Mr. Pizarro, AR will continue to submit written status reports every 30-days until the emergency response actions and subsequent cleanup are completed, and the RCRA-permitted hazardous waste treatment facility has resumed operations.

Should you have any questions or require any additional information, please contact me by phone at 540-854-2037 or by email at tim.holden@rocket.com.

Sincerely,

AEROJET ROCKETDYNE, INC.
Virginia Operations

Timothy E. Holden
Sr. Manager – Safety, Health and Environmental

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Culpeper, Virginia 22701

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ATT

cc:	L. Pizarro	EPA Region 3
	A. Zimmerman	DEQ – NRO
	R. Doucette	DEQ – Northern Regional Office
	L. Romanchik	DEQ – Central Office
	A. Alonso	DEQ – Central Office
	R. McAvoy	DEQ – Central Office
	D. Rymph	Aerojet Rocketdyne
	B. Schwennesen	Aerojet Rocketdyne
	B. Wheatley	Aerojet Rocketdyne
	R. Payne	Aerojet Rocketdyne

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Per 40 CFR Part 264.56(i) – Within 15 days of implementing the RCRA Contingency Plan, the owner/operator must submit a written report on the incident to the Regional Administrator (and the VA-DEQ Regional Office per our Plan). The report must include:

(1) Name, address, and telephone number of the owner or operator;

Corporate Headquarters
Aerojet Rocketdyne Holdings Inc.
2001 Aerojet Road
Rancho Cordova, CA 95742-6418

Mailing Address
P.O. Box 537012
Sacramento, CA 95853-7012
916-355-4000

(2) Name, address, and telephone number of the facility;

Aerojet Rocketdyne, Inc.
Orange County, VA Facility
7499 Pine Stake Road
Culpeper, VA 22701
EPA ID No. VAD981112618
540-854-2000

(3) Date, time, and type of incident (e.g., fire, explosion);

July 20, 2016; approximately 9:05 AM:

- During hazardous waste treatment operations at the permitted thermal treatment facility (TTF) where treatment of explosive wastes takes place, an unplanned ignition occurred, resulting in a loud noise and fire within the pans of Thermal Treatment Unit (TTU) #1 that had been loaded with explosive wastes. The TTF operators evacuated the area and the lead operator made an announcement over the two-way radios that all of the TTF operators were safe and had evacuated the TTF, and that there was a fire within TTU #1. The Incident Commander (IC) then got on the two -radio and implemented the Emergency Action Plan (EAP)/RCRA Contingency Plan, requesting all emergency responders to report to and stage at the Bldg. 18 Fire House. Upon meeting at the Bldg. 18 Fire House and upon conferring with the TTF operators, the IC in conjunction with the Safety, Health & Environmental (SH&E) Manager, made the determination to:
    - stand down from any immediate emergency response actions (consistent with our EAP for emergencies involving propellants or other explosive materials),
    - barricade/isolate the TTF area at a safe distance and, post a fire watch for a minimum 24 hours (watch for grass fires extending beyond the immediate area of the TTF)

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- convene the emergency management team (EMC) at the emergency operations center (EOC).

- No call for outside emergency assistance was made because the fire was limited to the TTF area, which is designed for open burning in pans of up to 7,000 pounds of propellant/explosive waste in a treatment event, and only approx. 500 pounds total was in the TTF (and approx. 400 pounds in TTU #1), and no immediate response efforts were called for.

(4) Name and quantity of material(s) involved;

Aerojet Rocketdyne has a RCRA permit to thermally treat solid rocket propellant wastes from manufacturing and research and development activities in steel containment burn pans or inside steel cages located within the burn pans. Up to 7,000 pounds of explosive waste is permitted to be treated per each TTF treatment event. There are 4 thermal treatment units (TTUs) surrounded by earthen berms within the TTF, with a total of 12 steel burn pans and 4 steel burn cages within those 12 pans. All the pans are 4 ft. x 12 ft. in size, two ft. deep, made of approx. ½ in. steel, and filled with 18 inches of sand for insulation of the pans from the heat generated by the treatment of the wastes.

Approximately 250 pounds of waste propellant ingredients were loaded into the four pans within TTU #1 and were directly involved in the incident. In addition there was about 500 pounds of waste solid propellant and waste propellant subassemblies in the transport box on the front of a forklift in TTU #1, and about 400 pounds of similar waste solid propellant loaded into TTU #2/Pan #3.

(5) The extent of injuries, if any;

The four TTF operators, after quickly relaying the nature of the event to the other emergency responders and site management that gathered at Bldg. 18, were taken by van to the onsite Medical Services building to be evaluated by the medical services staff, and all the employees were given a clean bill of health. The TTF operators were subsequently also taken to a hospital for a full evaluation and given medical clearance. The only reported injury was a back strain that occurred to the TTF observer that was sitting in the front seat of the observation vehicle at the far end of the TTU from the pans, as a result of the operator's reaction to the incident.

(6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and

Note: Our RCRA Contingency Plan (RCP) follows 40 CFR Part 264.56, Emergency Procedures (last update 4/30/15).

The IC in conjunction with the SH&E manager, assessed possible hazards to human health or the environment from this incident per the steps and guidelines outlined in our RCP.

Considerations for this assessment included:

- TTF area was barricaded at a safety distance and a fire watch posted.

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- TTF area is located in a remote area of the 2,100 acre facility, centrally located in a 75-acre cleared field, with a gravel access road immediately surrounding three of the four sides of the TTF and two separate plowed fire breaks completely surrounding the TTF, all designed to prevent the spread of grass fires from the TTF.
- TTF is sited/located based on types and quantities of explosive wastes to be open burned for safe distance to all other operating buildings and beyond the property boundary per:
  - DoD Contractor's Safety Manual for Ammunition and Explosives (A&E); 4145.26M; March 2008
  - VA-State Fire Prevention Code (VSFPC); 2012
  - National Fire Prevention Code (NFPA) 495 - Explosive Materials Code; 2013 Edition.
- Therefore, even if all the waste propellant/propellant ingredients that were inside the TTF at the time of the incident detonated rather than ignited and burned, there would have been no risk to human health beyond the property boundary of the facility.
- No further indication of burning or smoldering was observed the following morning from fire watch
- No immediate emergency response action was taken at the TTF consistent with our emergency procedures involving explosives/propellants - allow fire to burn itself out, stand down a minimum of 24 hours after any event involving propellants/explosives, including 24-hour stand-down after routine TTF waste treatment operations; determine if any explosives/propellants remain in the TTF; plan accordingly to develop safe emergency control measures with safeguarding to minimize risk.
- Air emissions were consistent and actually less than for the planned hazardous waste treatment operation. Both our RCRA permit and our air permit allow treatment by open burning of up to 7,000 pounds of similar waste propellant/explosive ingredients per treatment event. Emissions from this unplanned ignition event, which only involved about 250 pounds of waste propellant/propellant ingredients in TTU #1, were significantly less than permitted limits.
- Based on knowledge of the waste propellant ingredients in the pans involved in the unplanned ignition, and knowing that the majority of the waste material appeared to have been consumed in the ensuing fire in the pans within the TTU, our assessment determined that there was no release of hazardous materials exceeding a reportable quantity (RQ).
  - Even under worst case conditions, assuming that all of the waste material in the pans did not burn and was released to the ground, based on the type and quantity of explosive wastes involved in the incident, it was determined an no RQs would have been exceeded.
- So in consideration of the information and factors described above, and per the hazard assessment steps and guidelines in our RCP which are consistent with 40 CFR Part 264.56, it was determined that:
  - **No spill or release of hazardous materials exceeding a reportable quantity (RQ).**
  - **No threat to human health or the environment outside the facility boundary.**

Therefore there were no immediate notification requirements under RCRA.

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- Subsequent information (video/photos from a remote controlled drone on 7/22) confirmed there was no residual smoldering in the pans; identified that the event initiated in Pan #3 of TTU #1.
- Investigation team determined that the waste propellant ingredients/materials in Pan #3 were different from that in Pans #1, 2, and 4; it was also different from the waste propellants/propellant ingredients/propellant subassemblies in the forklift box in TTU #1; and different from the waste propellant loaded in TTU #2/Pan #3
    - Therefore, the threat of another unplanned ignition was significantly reduced. Note that the waste propellant in the three lever-packs in the forklift box were similar to the waste propellant already loaded into TTU #2/Pan #3.

The only direct emergency response action conducted to date was to remotely ignite the approximately 400 pounds of waste solid propellant that had been loaded into TTU #2/Pan #3 for the planned hazardous waste treatment event that was not involved in the fire that ensued from the incident in TTU #1. However, in order to eliminate the potential imminent hazard posed by 400 pounds of waste solid propellant exposed to the natural elements (sunlight, extreme heat and humidity, and significant rainfall) for over a week since the incident occurred, this waste propellant was ignited by use of a remote controlled drone (the same that was used to take videos/photos of the incident scene within TTU #1) to place a road flare into the pan which then ignited the waste such that it burned as it otherwise would have in a planned thermal treatment event.

(7) Estimated quantity and disposition of recovered material that resulted from the incident.

This information is yet to be determined, and will be dependent on the outcome of planned emergency control measures to be implemented under a RCRA emergency permit pursuant to 40 CFR Part 270.61. Those emergency measures are intended to address potential imminent hazards posed by the remaining untreated/unburned waste propellant/explosive materials within the TTF as a result of the incident, and may include treatment, storage, or disposal methods not covered under our current RCRA permit. Once those waste propellant/propellant ingredients area addressed, a full assessment will be made of the incident scene in order to determine decontamination and cleanup requirements, estimate the types and quantities of recovered material that may require disposition, and to develop a plan for startup of thermal treatment operations at the TTF.

Our emergency management committee, including the IC, the SH&E manager, and the site director, are involved in the development of the plans for emergency control measures under an emergency permit, decontamination/cleanup of the TTF, and for safe re-start of treatment operations.

The incident is under investigation in an effort to identify the root cause(s) and any other contributing factors, and recommend effective preventative actions. The investigation team consists of highly experienced Aerojet Rocketdyne employees from the Orange, VA site, from other AR facilities that work with explosives and propellants, and from our corporate headquarters. The investigation is ongoing.

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Our onsite emergency management committee (site management team) is developing the plans for:

1) implementing the emergency control measures not covered by our current RCRA permit under an emergency permit to address the potential imminent hazards posed by the remaining untreated waste propellant/propellant ingredients in the TTF
2) assessment, decontamination, and cleanup of the TTF, particularly in TTU #1 where the incident occurred
3) developing/implementing preventative actions
4) resuming hazardous waste treatment operations at the TTF